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THE NEW WATER-SUPPLY OF THE UNIVERSITY OF KANSAS.

By E. C. MURPHY, Lawrence, Kan.

From the opening of the University of Kansas, in 1866, until the construction of the Lawrence city water-works, in 1887, the water supply of the university consisted of the rainfall on the buildings, stored in cisterns. From the cisterns it was pumped into tanks near the top of the buildings, from whence it was distributed.

From the last-named date to December, 1894, the water, except that for drinking purposes, had been supplied by the city water company from the Kansas river. It was necessary to pump a part of this water into the tanks, as the city pressure is not sufficient to force the water to all parts of the buildings.

In the summer of 1893 the water company stopped pumping on account of difficulty with the city, thus cutting off the water from the university for about a week. This fact, together with a desire for a less expensive supply, led the regents to seek another source of supply. It was believed that the low ground south of the university would furnish sufficient water, and so a lot 50x127 feet, about 800 feet from the engine-house, was purchased.

Two wells and an intercepting tunnel were constructed. One well is 10 feet in diameter and 40 feet deep; the other, which is 25 feet from it, is 6 feet in diameter and 30 feet deep. The tunnel, which is 125 feet long, connects the wells and extends east and west parallel to the surface slope. Its center line is 27 feet below the surface of the ground. The wells are lined with rock, the tunnel is filled with rock.

The material through which the wells pass is alluvium, consisting mostly of clay, fine sand, and "soapstone." The latter layer is 30 feet below the surface. The bottom of the tunnel rests on it, and the large well extends 10 feet into it.

The water is pumped from the wells into four tanks in the buildings, the combined capacity of which is 5,500 gallons.

The pump is of the rotary type, makes 400 revolutions per minute, and has a capacity of 100 gallons per minute. It is 24 feet below the surface of the ground in the large well and is under water a part of the time. It is worked by a $7\frac{1}{2}$ horse-power electric motor.

The water is clear and of good quality, as shown by the following chemical analysis, made by Mr. H. P. Cady, in the university chemical laboratory:

	Parts per 100,000.
Sodium chloride	3.09
Silicon dioxide	1.40
Ferric oxide48
Calcium sulphate	10.62
Calcium carbonate	14.58
Magnesium carbonate	4.51
Total	34.68

The capacity of the plant has not been fully tested. In case it fails to

supply the ever-increasing need of the university, it is the intention to sink more wells.

The total cost of the plant is about \$1,000. The cost of operating is very little, as the engine used for running the shop machinery supplies the electric motor with power.